UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/536,736	03/28/2000	Helge Bastian	C12Q1/68	5490

29425 7590 12/23/2004

LEON R. YANKWICH
YANKWICH & ASSOCIATES
201 BROADWAY
CAMBRIDGE, MA 02139

EXAMINER	
AKHAVAN, RAMIN	
ART UNIT	**PAPER NUMBER**
1636	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

12/27/04 RA

Office Action Summary	Application No.	Applicant(s)	
	09/536,736	BASTIAN ET AL.	
	Examiner	Art Unit	
	Ramin (Ray) Akhavan	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,9-22,24-41,44-51,53-55,58-64 and 67-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 9-22, 24-41, 44-51, 53-55, 58-64, 67-75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of a response with amendments, filed 08/11/2004. In addition, receipt is acknowledged of a request to withdraw an inadvertently filed Notice of Appeal, filed 09/10/2004. Amendments to claims 1 and 51 are entered and the Notice of Appeal is withdrawn. All objections/rejections not repeated herein are hereby withdrawn. Where applicable, a response to Applicant's arguments will be included in the body of the objection/rejection set forth herein. Claims 1-5, 9-22, 24-41, 44-51, 53-55, 58-64, 67-75 are pending and under consideration. As no new grounds of rejection are set forth that were not necessitated by amendment, **this action is made FINAL.**

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. **Claims 1-5, 9-22, 24-41, 44-51, 53-55, 58-64, 67-75 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.**

This is a new ground of rejection that is necessitated by material changes to the base claims 1 and 51. The claims contain subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

More particularly, the amendments introduce a negative limitation where released nucleic acids "do not contact any solution that has contacted the opposite side of the non-siliceous surface on which the nucleic acids were not immobilized." This negative limitation does not find support in the instant specification as Applicant asserts. (citing p. 9, l. 26; p. 10, l. 10; Examples 3 and 15; Table 12). The cited passages in the specification provide information with respect to buffer and buffer solutions and not for the negative limitation introduced. Therefore, the negative limitation thus introduced constitutes NEW MATTER.

2. Claims 1-5, 9-14, 24-26, 28-30, 32, 39, 44, 50, 51, 58-60 and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by Ogawa et al. (EP 0431905 A1; hereinafter Ogawa).

This rejection is of record and repeated in salient part herein. A response to Applicant's arguments is included immediately below. The claims are directed to a process for isolating nucleic acids comprising steps of charging the topside of a two sided non-siliceous surface, where nucleic acids are immobilized on one side and released from the same side and where nucleic acids do not penetrate through or make contact with the opposing side of the non-siliceous surface. The immobilization buffer can charge the membrane, contain alkaline, halogenides or sulfates or more specifically contain halogenides of sodium or potassium or magnesium sulfate. The nucleic acid may be washed in a buffer containing metal ion, chaotropic agent or alcohol. The releasing solution can be water, aqueous salt or buffer solution.

Ogawa teaches a process for isolating DNA comprising applying a solution (triptone, NaCl and yeast extract) containing DNA and proteinase K to a membrane, which can be any

commercially available membrane, for example polysulfone (non-siliceous). (e.g., col. 3, ll. 37-41). Ogawa teaches that washing with an appropriate buffer solution would increase yield, and gives TE-buffer as an example. (e.g., col. 3, ll. 45-50). Ogawa also teaches that DNA is released from the membrane using shaking in a volume of TE buffer, where the eluate is recovered by pipette (without penetration through the membrane or contract with opposing surface). (e.g., col. 4, ll. 35-39). In sum Ogawa anticipates the rejected claims.

Response to Arguments

Applicant's argument is summarized as follows: First, unlike the reference, the instant claims do not recite a step utilizing an ultrafiltration membrane (Remarks, p. 17, ¶ 2). Second, the reference requires knowledge of various DNA sizes as a necessary prerequisite to select the appropriate size ultrafiltration membrane, a requirement that is unnecessary in Applicant's invention. (Id.) Finally, that the alkali treatment in the reference would destroy RNA, thus could not be used to isolate RNA.

That a reference includes additional steps, elements or characteristics is of little moment in the instant case. Where a claim recites the term "comprising", then the only requirement is that a reference teaches the recited limitations. That additional steps or elements are used in the reference does not preclude that reference reading on the claim as written. Therefore, with respect to Applicant's first and second argument, that Ogawa describes a process that requires embodiments not delimited in the claims does not obviate the fact that Ogawa teaches the limitations of the claims. Furthermore, with respect to alkali treatment destroying RNA, as long as some RNA is retained, then the process does isolate, at least a limited quantity of RNA.

If applicant has evidence or can show that the process in Ogawa does not isolate at least some quantity of RNA, then Applicant is welcomed to present such evidence. Because the Office does not have the facilities for examining and comparing the applicant's process with the process of the prior art, the burden is on the applicant to show a difference between the claimed process and the process of the prior art (e.g. that no RNA is isolated using the method taught by Ogawa). See in re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977). In sum, Applicant's arguments have been considered but are not deemed persuasive, because Ogawa teaches the claimed limitations, notwithstanding any additional embodiments set forth therein.

3. Claims 1-5, 9-14, 24-26, 28-30, 32, 39, 44, 50, 59-60 and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by Schneider (EP 0442026 A2).

This rejection is of record. A response to Applicant's argument is set forth immediately below. Schneider teaches a process of isolating nucleic acids comprising charging a membrane with a cationic agent (Cetyl-trimetil-ammonium bromide) where DNA is immobilized on a matrix (polypropilene or polyethyelene), where the hydrophilic surface enables DNA to be recovered easily and speedily after washing operations, which include NaCl, ethanol and water. The DNA is eluted with aqueous solution or low ionic strength. (e.g. col. 2, ll. 30-55, bridging ¶ to col. 3). Therefore, Schneider anticipates the rejected claims.

Response to Arguments

Applicant's argument is once again predicated on the cited art teaching more than is claimed in the instant application. More particularly, Applicant asserts that the reference teaches separate steps, such as extracting protein through solvent extraction. (Rem. p. 19).

As explained in the foregoing discussion of Applicant's argument in regard to the Ogawa reference, that cited prior art teaches additional limitations not required by the claimed invention is of little moment with respect to whether the cited art anticipates the rejected claims. Furthermore, the nucleic acids as taught in Schneider are immobilized on a non-siliceous membrane. (e.g. polyethylene matrix; col. 2, ll. 30-55). Therefore, Applicant's assertion that Schneider specifically teaches a preference for borosilicate glass for the ultrafiltration does not change the fact that a non-siliceous membrane is also taught.

4. **Claims 1-3, 5, 9-22, 24-32, 39, 41, 44-50 and 58-64 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Millipore, 1995 (accessed on the web at URL: millipore.com/catalogue.nsf/docs/C7485) (last visited 02/07/04).**

This rejection is of record and repeated herein. Applicant's argument is addressed immediately below. In addition to the aforementioned subject matter, the claims are drawn to a process of isolating nucleic acids on one surface of a two-surfaced non-siliceous surface where the nucleic acids do not penetrate to or make contact with one side of the non-siliceous substrate. The average pore size for the surface is between 0.001 and 50 microns. In addition, at least one chemical reaction carried out between release and removal of nucleic acids. Furthermore, the claims are drawn to the immobilization buffer or release buffer containing several different agents: salts of alkaline and alkaline earth metals with mineral acids, alkaline halogenides or sulfates, halogenides of sodium or potassium sulfate, organic acids, hydrocarbons, alkanols, phenols, water, acetates, cyanates, iodides, iodides and urea.

Millipore teaches using a cellulose membrane and discloses compatibility of the membrane with various chemical compounds, including acids/alkalis, organic solvents and other compounds. (e.g., Microcon Centrifugal Filter Device, pp. 8-9 ; available at URL : millipore.com/publications.nsf/docs/pf185). In addition Millipore teaches that DNA purification can be conducted using the disclosed membrane with appropriate buffers. Only the top surface is contacted, where the nucleic acids are immobilized and release with intervening buffer washes if necessary. The immobilization buffer contains a chaotrophic agent where the agent is between 0.01-10 molar aqueous solution and a pH between 3 to 11. The releasing step is carried out using an aqueous salt or buffer solution.

Millipore teaches isolating nucleic acids from the same surface where nucleic acids are immobilized through centrifugation onto a cellulose membrane (non-siliceous surface with average pore of 40 microns). (e.g., p. 2, under Protocol B). Nucleic acids are immobilized onto a cellulose (non-siliceous) membrane in an appropriate buffer (e.g. TE buffer; intrinsically between 0.1 and 1mM and pH of between 6-8). (Id.) Furthermore, Millipore teaches that the membrane can be washed before release of nucleic acids, where release is achieved by inverting the tube containing the sample and spinning to recover the isolated nucleic acid in the appropriate buffer (i.e. the nucleic acids never penetrate to or come into contact with the opposing surface of the non-siliceous membrane). In addition when releasing the nucleic acids a buffer containing various compatible chemical compounds could be used to retrieve the nucleic acids; e.g. acetic acid, sodium hydroxide, ammonium sulfate, chloroform, ethyl acetate, guanidine thyocyanate and urea (Microcon Centrifugal Device, at Table 4, p. 8).

The ordinary skilled artisan seeking to isolate nucleic acids using the Millipore membrane would have been motivated to use commonly available and utilized chemical compounds in lyzing and preparing cells containing desired nucleic acids, which could be isolated using the Millipore membrane. Furthermore, the nucleic acids immobilized on the membrane can undergo buffer exchange or washing before release from the membrane.

Given the teachings in Millipore and the level of skill of the ordinary skilled artisan at the time of applicant's invention, it must be considered that the artisan would have had a reasonable expectation of success is utilizing the Millipore teachings to isolate nucleic acids using the Millipore membrane with preparations containing the various buffers taught.

Response to Arguments

Applicant's argument is grounded in the Millipore reference providing additional elements, steps or characteristics that are not required by Applicant's claimed process. (Rem. p. 21). For reasons already discussed, that a cited reference teaches additional embodiments or includes additional steps or elements does not obviate such art as anticipating or making obvious the claimed subject matter.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ray Akhavan whose telephone number is 571-272-0766. The examiner can normally be reached between 8:30-5:00, Monday-Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel, PhD, can be reached on 571-272-0781. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 703-872-9307 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Respectfully submitted,

Ray Akhavan/AU 1636

GERRY LEFFERS
PRIMARY EXAMINER